Amendments to the Specification:

Please replace the paragraph on page 12, line 2, with the following amended paragraph:

Referring to the drawings and particularly to FIG. 1, a block diagram of a direct-coupled electroionic processing system 10 in accordance with an embodiment of the present invention is shown. The direct-coupled electroionic processing system 10 comprises a high frequency AC power source 12, 14, a treatment cell 20, at least two treatment electrodes 22, 24, a process controller 26, an on-line microbial analyzer 28, a hydrogen peroxide (H_2O_2) analyzer 30 and a conductivity analyzer 32. A signal generator 12 supplies a high frequency (20kHz-450kHz) signal which is power amplified by a power amplifier 14 for input to an impedance matching transformer 16. Most high frequency power amplifiers require an impedance load ~~in the~~ of 50 ~~to 600 ohm range~~ ohms. A current sense coil 18 is also provided to signal the process controller 26 on the current level in the circuit. The current supplied to the treatment cell 20 preferably adapts to varying microbial loads, as detected by the on-line microbial analyzer 28. The current adjustment minimizes the power consumption; and thereby the power costs based on the on-line measurements of ~~coliform~~ bacteria and other microorganisms in the aqueous solution to be treated. The on-line microbial analyzer 28 measures the change in ~~coliform bacteria~~ microbial count levels between an input sample point 34 (untreated water) and an output sample point 36 (treated water). While this instrumentation is not necessary for cost-effective wastewater disinfection, it does reduce power usage costs by adjusting ~~circuit~~ power levels to changing microbial loads (coliform counts). It also continually insures that the system is performing its disinfection function.

Please replace the paragraph on page 18, line 10, with the following amended paragraph:

FIG. 3 is a block diagram of a capacitively-coupled electroionic processing system 50 in accordance with another embodiment of the present invention. The capacitively-coupled electroionic processing system 50 comprises a high frequency AC power source 52, 54, a treatment cell 60, at least two treatment electrodes 62, 64 with a dielectric material 63, 65 on one surface of each electrode 62, 64, a process controller 66, an on-line microbial analyzer 68, a hydrogen peroxide (H_2O_2) analyzer 70 and a conductivity analyzer 72. A signal generator 52 supplies a high frequency (20kHz-450kHz) signal which is power amplified by a power amplifier 54 for input to an impedance matching transformer 56. The capacitively-coupled electroionic processing system 50 includes at least two capacitors that capacitively-couple the signal to the load. A current sense coil 58 is also provided to signal the process controller 66 on the current level in the circuit. The process controller 66 will adjust the power based on the inputs from the on-line microbial analyzer, the conductivity analyzer, and the H_2O_2 analyzer. The current supplied to the treatment cell 60 preferably adapts to varying microbial loads, as detected by the on-line microbial analyzer 68. The current adjustment minimizes the power consumption; and thereby the power costs based on the on-line measurements of ~~coliform~~ bacteria <u>and other microorganisms</u> in the aqueous solution to be treated. The on-line microbial analyzer 68 measures the change in ~~coliform bacteria~~ <u>microbial</u> count levels between an input sample point 74 (untreated water) and an output sample point 76 (treated water). While this instrumentation is not necessary for cost-effective water and wastewater disinfection, it does reduce power usage costs by adjusting ~~circuit~~ <u>power</u> levels to changing microbial ~~loads (coliform counts)~~ <u>count levels</u>. It also continually insures that the system is performing its disinfection function.

Please replace the paragraph on page 21, line 9, with the following amended paragraph:

FIG. 6 is a block diagram of an inductively-coupled electroionic processing system 100 in accordance with yet another embodiment of the present invention. The inductively-coupled electroionic processing system 100 comprises a high frequency AC power source 102, 104, an inductive treatment apparatus 106, a process controller 108, an on-line microbial analyzer 110, a hydrogen peroxide (H_2O_2) analyzer 112 and a conductivity analyzer 114. A signal generator 102 supplies a high frequency (20kHz-450kHz) signal which is power amplified by a power amplifier 104 for input to an impedance matching transformer 116. The equivalent circuit for this embodiment is a series resonant LCR circuit, FIG. 11, which includes an inductor (the coil) 126, a capacitor 124, and a resistor (stray resistance of coil and capacitor) 128. The input impedance to the LCR circuit varies with the application, so that a matching transformer 116 is required to match the circuit elements of the treatment apparatus 106. A current sense coil 118 is also provided to signal the process controller 108 on the current level in the LCR circuit. The process controller 108 will adjust the frequency of the signal generator 102 until minimum current in the circuit is achieved. The current supplied to the treatment apparatus 106 preferably adapts to varying microbial loads, as detected by the on-line microbial analyzer 110. The current adjustment minimizes the power consumption; and thereby the power costs based on the on-line measurements of ~~coliform~~ bacteria <u>and other microorganisms</u> in the aqueous solution to be treated. The on-line microbial analyzer 110 measures the change in ~~coliform bacteria~~ <u>microbial</u> count levels between an input sample point 120 (untreated water) and an output sample point 122 (treated water). While this instrumentation is not necessary for cost-effective water and wastewater disinfection, it does reduce power usage costs by adjusting ~~circuit~~ <u>power</u> levels to

changing microbial ~~loads (coliform counts)~~ count levels. It also continually insures that the system is performing its disinfection function.

Please replace the paragraph on page 29, line 12, with the following amended paragraph:

FIG. 7 is a diagram of a first coaxial topology inductive treatment apparatus for use with the inductively-coupled electroionic processing system embodiment of the present invention. The treatment apparatus 106A includes water 130 flowing through an inductive coil 132 (water core) wound around a pipe 134 that encircles the treatment water 130. Electric field lines 136 are shown emanating from the ends of the core 130 and encircling the coil 132.